Chapter 3

# Front Panel

*This chapter describes the displays and buttons on your* ***CDQPrima***

## 3. The CDQPrima Keypad and Display

Rev. 6

**An internal keypad beeper, which gives a short beep each time a key is pressed, gives positive feedback for each button press. This feature is user controllable, and can be switched off when the *CDQPrima* is used in environments where noise cannot be tolerated. On all models, the display contrast can be adjusted over a wide range to allow for easy viewing from any angle.**

### 3.1 Character Display (Models 110, 120, 210 & 220)

The LCD display for the ***CDQPrima*** models 110, 120, 210 and 220 is 2 lines by 16 characters. This display is used for all responses to front panel user commands as well as spontaneous messages such as incoming call connect messages. The display can be used to show all menu commands and is scrolled using the cursor keys. An example of the display is shown here:

```
cdqPRIMA OONFBOO
[Common]    Encoder
```

The top line of the display is for information such as current menu branch, encoder and decoder status, prompts and error messages. The bottom line is for menu navigation and other information.

The top line of the display always shows current codec status in the form of:

**EELFBDD**

The first two positions, **EE**, indicate left and right encoder audio level overload, and are blank for no overload or '**O**' for overload. If these overload indicators are present, audio input levels should be reduced. The next position indicates system loopback state, '**N**' for normal mode, '**L**' for loopback.

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Next is the decoder frame state: When using stereo and mono modes, this will show '**F**' for framed and '**—**' for not framed. **When using any independent mono mode, a '1' indicates the left channel program is framed and the right channel program is not. A '2' indicates that the left channel program is not framed and the right channel program is. A '3' indicates both channels are framed.** The decoder must be framed to receive audio.

A '**B**' will flash momentarily every time there is a bit error in the incoming bit stream. The last two positions indicate the decoder left and right audio overload, blank for not overloaded, '**O**' for overload. If these overload indications are present, the audio input to the far-end codec should be reduced.

## 3.2 Graphics Display (Model 230)

The ***CDQPrima*** model 230 has a graphics display that allows 8 rows of 40 characters each, or 240 by 64 pixels. When operating in the character mode, the display functions in a manner similar to the other ***CDQPrima*** models, with more information visible without scrolling. The graphics mode is used for graphical display of measurement information, such as spectrum analyzer and stereo phase.

## 3.3 LCD Display Contrast Adjustment

Rev. 6

**The LCD display of the CDQ *CDQPrima* can be adjusted over a wide range by using the keypress sequence**

<Common><Contrast><Light/Dark>

**and continue pressing the ENTER key until the desired display contrast has been achieved.**

## 3.4 Front Panel Controls

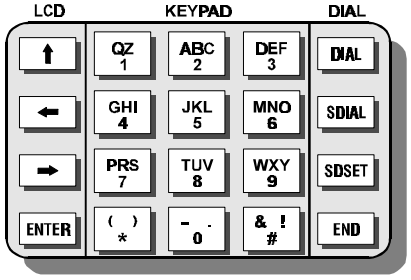


*Figure 3-1 Model 110 & 210 keypad*

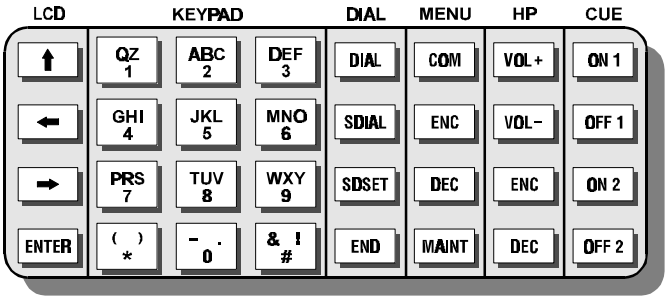


*Figure 3-2 Model 120 & 220 keypad*

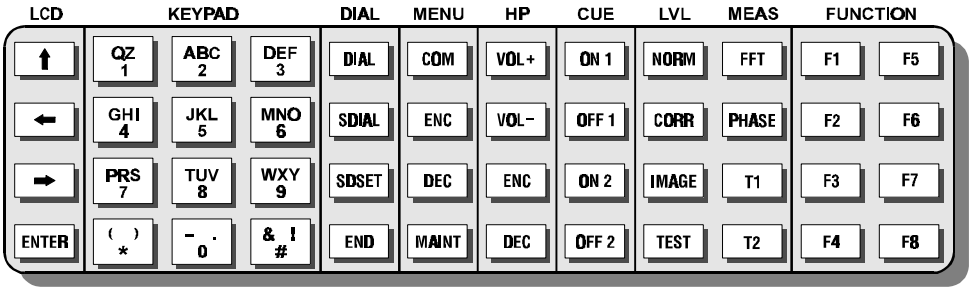


*Figure 3-3 Model 230 keypad*

### 3.4.1 Cursor Keys (All Models)

The 4 keys under the LCD label are used to control the cursor. They are:

- **UP ARROW**
- **LEFT ARROW**
- **RIGHT ARROW**
- **ENTER**

The up arrow key is used to move up the menu tree. This key is also used on power-up to force entry into the ROM boot mode that is used for

software upgrades. This key is also used to exit local graphical measurements that are in progress on model 230. In addition, pressing this key during a dialing or speed dialing sequence terminates the action.

The left and right arrow keys are used to move to the left and right in the menu tree.

The **ENTER** key is used to bring you down to the next level or execute the menu tree entry enclosed within the square brackets ( [ ] ).

### 3.4.2 Alphanumeric Keypad (All Models)

The alphanumeric keypad is used to enter all information required for the execution of commands. Besides digits 0-9, the entire 26-letter alphabet and limited punctuation is represented by only 12 keys. By repeatedly pressing a key, different characters are displayed, and that character is locked in when the cursor keys are used to scroll to the next character. Once the character string has been entered, the **ENTER** key enters or executes the string.

### 3.4.3 Dial Keypad (All Models)

The dial keypad consists of the 12 keys under the KEYPAD label. These keys form a general-purpose alphanumeric keypad. Different commands enable different characters on these keys. For example, dialing commands enable only the numeric selections for these keys. When Prima Logic Language commands are entered all the keys are enabled. By depressing the 2 key repeatedly, the A, B and C characters are displayed. When such multi-character modes are enabled, the left and right arrow keys are used to move to the left and right on the current line. The **ENTER** key is used to accept the entire entry.

### 3.4.4 Dial Setup Keys (All Models)

The 4 keys below the **DIAL** label are used for Quick Configurations and for dialing when using an internal Terminal Adapter. They are:

**DIAL**
**SDIAL**
**SDSET**
**END**

The **DIAL** key allows the direct dialing, using one or all of the ISDN lines when an internal Terminal Adapter is used. Before dialing can be attempted, the Terminal Adapter Digital Interface (DIF) must be defined by using the **CIF** command or from the keypad. The DIF must contain a Terminal Adapter (TA) type of Digital Interface Module

(DIM) such as a TA101. You cannot use the ***CDQPrima*** dial keypad to dial through an external terminal adapter.

Depressing the DIAL key begins the dialing sequence. The LCD display will prompt the user for the line, bit rate and telephone number. The last numbers dialed on all lines are saved as long as power is maintained. To dial a different number, simply overwrite the previous number. Once the ENTER key is depressed denoting the entry of the phone number, the dialing operation begins. The DIF LED (on models so equipped) begins to flash indicating that the ***CDQPrima*** is dialing. When the light becomes solidly on, the connection is established. The calling status is momentarily displayed on the LCD screen on all models.

The SDIAL key is used to speed dial a destination. After depressing SDIAL , the LCD screen prompts for the 1, 2, or 3 digit speed dial number, representing which of the 256 possible speed dial entries to dial. Pressing the ENTER key causes the ***CDQPrima*** to configure and dial. The parameter required by this operation is described in the **CSD** remote control command, found in the ***CDQPrima*** Remote Control Manual. The SDIAL key is also used for evoking "Quick

The SDSET key is used to set up or edit a speed dial entry and maintain the speed dial directory. Depressing this key brings up a sub menu with commands that allow you to save, recall, view, edit and delete existing entries, and to add new entries. Selecting <Add entry> produces a series of prompts on the LCD display to enter the speed dial parameters. The parameters to be entered are described in the **CSE** remote control command, and include bit rate, sample rate, algorithm, mode, etc. See chapter 6 for an example of creating a Speed Dial entry.

The END key is used to terminate a connection made by the DIAL and SDIAL keys. Depressing this key allows all or any combination of lines to be dropped. See the **CHU** command in the ***CDQPrima*** Remote Control Manual.

### 3.4.5 Menu Keys (Models 120, 220 & 230 only)

The four keys under the MENU label are 'short cut' keys used to quickly move to one of the four main branches of the menu tree. These branches are:

**COM** Commands common to the entire unit

| | |
|---|---|
| **ENC** | Commands for the encoder |
| **DEC** | Commands for the decoder |
| **MAINT** | Maintenance commands |

### 3.4.6 Headphone Keys (Models 120, 220 & 230 only)

The four keys under the HP label are used to control the output of the front panel headphone jack. These keys are:

**VOL+**
**VOL-**
**ENC**
**DEC**

The keys labeled **ENC** and **DEC** are used to select the encoder and decoder respectively. If the **ENC** button is depressed, the input signal to the encoder section is output to the headphone jack. If the **DEC** button is depressed, the decoder output is present at the headphone jack. There are four LEDs under the label **HP** STATUS (see figures 3-4 and 3-5) that are controlled by the **ENC** and **DEC** push buttons. If the **ENC** button is depressed, one or both of the encoder headphone LEDs illuminate. When the **ENC** button is first depressed, the output of the left and right channels are output to the left and right earphones and both encoder headphone LEDs are illuminated. If the **ENC** button is depressed again, the encoder left channel LED is illuminated and the input to the encoder left channel is output to both the left and right channel headphones. If the **ENC** button is depressed again, the right channel HP LED is illuminated and the signal that is input to the right channel of the encoder is connected to both the left and the right channel of the headphones. A similar action occurs when the **DEC** button is repeatedly depressed. The ***CDQPrima*** remembers its settings so that Encode / Decode comparison can be easily accomplished

The **VOL+** and **VOL-** buttons control the volume of the headphone output. Depressing the **VOL+** increases the headphone volume while depressing the **VOL-** decreases the headphone volume. The headphone volume level ranges from 0 (mute) to 127 in arbitrary volume units (approximately 1-dB steps).

The volume buttons control the left and right channels simultaneously but the encoder and decoder output signals have separate volume levels that are active when the **ENC** and the **DEC** buttons are depressed. There is no left-right balance control.

**!note:**

**If the headphone volume is set too high, distortion may occur. We recommend using efficient headphones.**

**Also note that the encoder headphone signal is taken at the output of the A/D converter, so if a low sample rate is selected, a lower fidelity signal will be heard through the headphones.**

### 3.4.7 Cue Keys (Models 120, 220 & 230 only)

The four buttons under the CUE label are general-purpose front panel switches. These four buttons represent two switches. These two switches can be either on or off. For example, depressing the ON 1 button causes switch 1 to turn on, while depressing the OFF 1 button causes switch 1 to turn off. The corresponding action occurs for the ON 2 and OFF 2 buttons for switch 2. Switch 1 and switch 2 defaults are connected to CI1 and CI2 and the signals are sent to the far-end codec (see the ***CDQPrima*** Technical Reference Manual), but can be re assigned.

The default setup of the ***CDQPrima*** assigns switch 1 (operated by the ON 1 and OFF 1 buttons) to send a cue from the near end to the far end unit. Depressing the ON 1 button causes the **SCUE1 LED** to illuminate indicating that cue 1 is being sent. The far end ***CDQPrima*** will illuminate its **RCUE1 LED** indicating that it received this cue. Depressing the OFF 1 button causes the **SCUE1 LED** to extinguish indicating that there is no cue 1 being sent.

### 3.4.8 Level Meter Control Keys (Model 230)

The four keys below the LVL label on the model 230 front panel are used to control the audio level LED display. Although Models 120 and 220 have the same display features and functions, these features must be activated using the menu or by remote control. The keys are labeled:

**NORM**
**CORR**
**IMAGE**
**TEST**

Depressing the NORM key causes the audio level LEDs to display the average and peak levels. Each LED represents 2 dB and the signal corresponding to the maximum input is labeled 0 dB.

Depressing the CORR key causes the level LEDs to display the stereo correlation. The values for the left/right correlation are -1 to +1 where a reading of +1 indicates that the left and right channels are exactly in phase. A correlation of -1 indicates that the left and right channels are

exactly out of phase. In-phase stereo signals may be properly mixed into a mono signal. Out of phase signals will cancel.

Depressing the **IMAGE** key causes the level LEDs to display the stereo balance of the left and right channels. If the levels of the left and right channels are the same, then the stereo image will be in the center above the stereo image label '**C**.' If the level of the right channel is more than the left channel, the stereo image LED will move to the right indicating the stereo image has moved to the right.

Depressing the **TEST** button causes all the LEDs to illuminate for a few seconds as a check for proper operation.

### 3.4.9 Measurement Keys (Model 230 only)

The four measurement keys,

**FFT**
**PHASE**
**T1**
**T2**

are used for graphics measurements. The results of these measurements are displayed on the graphics display.

The key labeled **FFT** is used to display the real-time spectrum analysis of the signal which is input to the left channel of the encoder. It is also possible to view Encoder Right, Decoder Left and Decoder Right.

The **PHASE** key is used to display a real-time phase display of the left and right channels.

The **T1** and **T2** keys are currently set to a factory default of decoder left spectrum and decoder phase displays respectively.

### 3.4.10 Function Keys (Model 230 only)

The eight keys labeled **F1** through **F8** are user definable function 'hot' keys. Any remote control command may be attached to any of these keys. See the **CHK** command in the ***CDQPrima*** Remote Control Manual for instructions on how to define one of these hot keys. Hot key functionality is available on all ***CDQPrima*** models when using the optional Windows Remote Control program.

### 3.4.11 Keypad Beeper

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A keypad beeper gives a short tone each time a key is pressed, providing positive feedback to the user. In some instances, it may be desireable to turn the beeper off. Use the

<Common><Buzzer><Pb Click>

keypad sequence to deactivate the beeper.

## 3.5 Front Panel Status Indicators

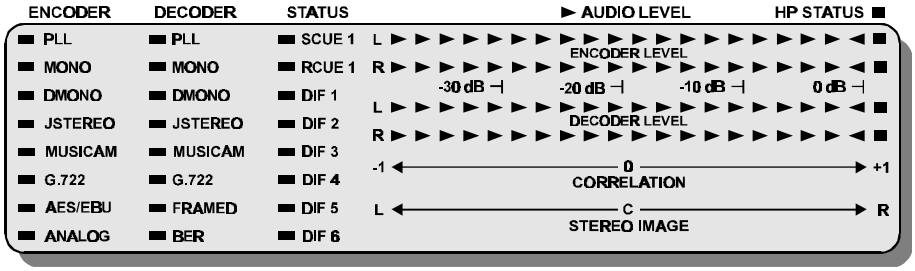


*Figure 3-4 Model 120 and 220 Status & Level Display*

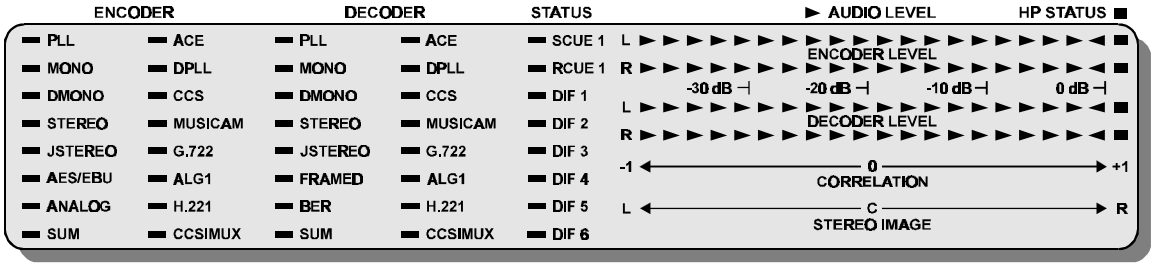


*Figure 3-5 Model 230 Status & Level Display*

### 3.5.1 Encoder and Decoder Status LEDs

#### 3.5.1.1 PLL

These LEDs illuminate green when the encoder or decoder phase locked loop is locked. These LEDs must be on for proper operation, but may not illuminate until a connection is established. The encoder PLL LED will illuminate only if the ***CDQPrima*** is receiving timing from the network.

#### 3.5.1.2 MONO

**!note:**

The encoder MONO LED illuminates yellow when the ***CDQPrima*** encoder is in the mono mode. The decoder MONO LED illuminates when the decoder is receiving mono audio. These LEDs also illuminate when G.722 is being used, which only supports mono. **Please note that even if you configured the *CDQPrima* for joint stereo, the mono LED will illuminate until two or more lines are connected.** At 64 kb/s, the ***CDQPrima*** defaults to mono.

#### 3.5.1.3 DMONO

The encoder DMONO LED illuminates yellow when the ***CDQPrima*** encoder is in the dual mono mode. The decoder DMONO LED illuminates when the decoder is receiving dual mono audio.

#### 3.5.1.4 JSTEREO

**!note:**

The encoder JSTEREO LED illuminates yellow when the ***CDQPrima*** encoder is in joint stereo mode. The decoder JSTEREO LED illuminates when receiving joint stereo frames. **It is normal for the JSTEREO indicators to flash irregularly during quiet audio passages**. On models 120 and 220, if the MONO, DMONO and JSTEREO LEDs are all extinguished, the encoder is generating or receiving stereo frames.

#### 3.5.1.5 STEREO (230 only)

This encoder STEREO LED illuminates yellow when an ISO/MPEG stereo frame is sent, and the decoder STEREO LED illuminates when stereo frames are received.

#### 3.5.1.6 MUSICAM

These LEDs illuminates yellow when MUSICAM or ISO/MPEG layer II frames are being sent or received.

#### 3.5.1.7 G.722

This LED illuminates yellow when G.722 audio compression is being used.

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**If both the MUSICAM and G.722 LEDs are dark on *CDQPrima* Models 120 and 220, then ISO/MPEG Layer III frames are being used.**

#### 3.5.1.8 AES/EBU (Encoder only)

This LED illuminates yellow when the input audio source is from the rear panel AES/EBU, S/PDIF or optical inputs.

#### 3.5.1.9 ANALOG (Encoder only)

This LED illuminates yellow when the input audio source is from the rear panel analog XLR connectors.

#### 3.5.1.10 SUM (230 only)

These LEDs illuminate when the encoder or decoder has detected an error. This LED is programmable and thus its meaning depends on the current definition. See the chapter on Prima Logic Language in the ***CDQPrima*** Technical Reference Manual.

#### 3.5.1.11 ACE (230 only)

These LEDs illuminate yellow when ACE (Advanced Concealment of Errors) is enabled. ACE protects sensitive parts of the audio frame in the presence of bit errors. See the ***CDQPrima*** Technical Reference Manual for details of using ACE.

#### 3.5.1.12 DPLL (230 only)

The encoder DPLL LED illuminates yellow when the encoder AES/EBU, S/PDIF or OPTICAL digital audio input is present. An illuminated DPLL LED is required for proper operation of digital audio input signals.

This decoder DPLL LED illuminates yellow when the decoder AES/EBU, SPDIF or OPTICAL sync input is receiving a valid digital sync signal. This signal must be present if decoder digital audio synchronization is required.

#### 3.5.1.13 CCS (230 only)

The encoder CCS LED illuminates when an older MUSICAM USA type of compressed audio frame is transmitted. This LED should be illuminated for proper operation with older MUSICAM USA CDQ2000 and CDQ2001 encoder and decoder to insure proper operation at all bit rates.

The decoder CCS LED illuminates when the decoder is receiving an older version of MUSICAM USA type of compression, as generated by early MUSICAM USA Model CDQ2000 and 2001 codecs.

#### 3.5.1.14 ALG1 (230 only)

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**These LEDs illuminate when ISO/MPEG Layer III frames are being sent or received.**

#### 3.5.1.15 H.221 (230 only)

These LEDs illuminate yellow when J.52 type of H.221 multiple line BONDING is in effect.

#### 3.5.1.16 CCSIMUX (230 only)

These LEDs illuminate yellow when CDQ2000 or CDQ2001 type of 2-line (2x56 or 2x64) BONDING is in effect.

#### 3.5.1.17 FRAMED (decoder only)

This LED illuminates green to indicate that the ***CDQPrima*** is receiving a properly framed signal. Audio output will be muted if this LED is not illuminated. There is no indication if the far-end codec is receiving your audio.

**!note:**

#### 3.5.1.18 BER (Decoder only)

This LED illuminates red to indicate that a bit error has been detected. **Please note that bit errors are caused by the transmission medium, not the codec**.

### 3.5.2 Status

#### 3.5.2.1 SCUE1

Normally, this LED illuminates when the ON 1 button is depressed and is extinguished when the OFF 1 button is depressed. Its normal meaning is that a cue has been sent to a far end decoder to be displayed on the far end **RCUE1 LED**.

The **SCUE1 LED** can be programmed to mean other things. See the Prima Logic Language chapter in the ***CDQPrima*** Technical Reference Manual for programming instructions.

#### 3.5.2.2 RCUE1

Normally this LED illuminates when cue 1 has been received from the far end encoder. This LED can be reprogrammed to mean other things. See the Prima Logic Language chapter in the ***CDQPrima*** Technical Reference Manual for programming instructions.

**!note:**

The RCUE1 lamp will illuminate when connecting to our 24-hour Music Line test number. This is normal.

#### 3.5.2.3 DIF1, DIF2, DIF3, DIF4, DIF5 and DIF6

There are six LED indicators for the ISDN digital interface TA101, TA201 or TA301 status. These LEDs can be in 3 states. These are:

- OFF (disconnected)
- FLASHING (TA dialing)
- ON (connected)

These LEDs may always be on if non-TA DIFs are used, but are always off if a DIF is not present.

### 3.5.3 Level LEDs (Model 120, 220 & 230 only)

#### 3.5.3.1 Peak & Average Level LEDs

The default level mode of operation displays the average and peak levels of the encoder input and decoder output signals. Each LED represents 2 dB of signal level and the maximum level is labeled 0 dB.

**!note:**

The encoder level meters are calibrated relative to the maximum clipping level selected, that is, if +15 dB clipping level is selected, then the right-most level LED is 0 dB down from + 15 dB. The input clipping levels can be +12, +15 and +18 dB.

The decoder level meters are always calibrated from the maximum output level of +18 dB, regardless of the output level selected.

The 'peak hold' feature of the level LEDs shows the highest peak level of any audio sample. The peak level LED has a fast attack and a slow decay: i.e., the peak value is instantly computed; and the single peak level LED instantly moves to the value representing this signal. If the peak level of all future signals is smaller, then the peak level LED slowly decays to the new peak level.

The level mode can be selected from the keypad using the

<Common><Lvl LED's><Mode><Normal>

keypress sequence or by pressing the **NORM** button on the ***CDQPrima*** 230.

#### 3.5.3.2 Stereo Image Display

The stereo image display is used to display the Left/Right stereo balance. This is useful to confirm a proper stereo image. The stereo image mode can be selected from the keypad using the

<Common><Lvl LED's><Mode><STEREO IMAGE>

keypress sequence or by pressing the **IMAGE** button on the ***CDQPrima*** 230. When in this mode, the encoder and decoder VU meters become a single dot, the position of which shows the relative stereo image, left to right.

#### 3.5.3.3 Correlation Display

This display is used to check if the left and right channels are phase correlated (+1). If the left and right channels are correlated, or in phase, they can be mixed to mono without signal cancellation. The channel correlation mode can be selected from the keypad using the

<Common><Lvl LED><Mode><STEREO CORR>

keypress sequence or by pressing the **CORR** button on the ***CDQPrima*** 230. When in this mode, the encoder and decoder VU meters become double dots, the relative position indicates the instantaneous correlation (phase) between the two audio channels.

#### 3.5.3.4 Message Display

The level LEDs can be used to display a scrolling message. See the ***CDQPrima*** Technical Reference Manual for programming instructions.

#### 3.5.3.5 Selective Dimming

The Status, Encoder and Decoder groups of LEDs can be independently dimmed to allow emphasis of a particular group. To selectively dim a section of the LED display, use the

<Common><Lvl LED's><Intensity>

keypress sequence, select a section, and then select a brightness level, from 1 to 15.

#### 3.5.3.6 Headphone Status Indicators

The headphone indicators at the far right of the level displays are used to denote the signal output to the headphones. If both LEDs (associated with either the encoder or decoder) are illuminated, then the both channels are output to the headphone. If only the left LED is illuminated, the left audio channel is output to both the left and right headphones. Similarly if the right channel headphone LED is illuminated, right channel audio is being fed to both ears.

## 3.6 Front Panel Connectors

### 3.6.1 Headphone Jack (Model 120, 220 & 230 only)

The front panel 1/4-inch (.64 cm) headphone jack is located on the front panel for convenient monitoring of input or output signals. The level and control of the headphone output is controlled by the HP front panel push buttons or by remote control commands.

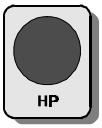


*Figure 3-6 Headphone Jack*

#### 3.6.1.1 Headphone Level Adjustment and Source Selection

The intelligent headphone circuit available on models 120, 220 and 230 can be set to monitor any one of six sources: Encoder left, right or stereo, decoder left, right or stereo. In addition, level settings can be set individually for each headphone source.

To select the source, press either the **ENC** or **DEC** buttons under the HP column, and observe the LED's under the HP status column to the right of the VU meters. If only a single LED is illuminated, then you are monitoring either the right or left channels. Repeated presses of the **ENC** or **DEC** cycle through stereo (both LED's illuminated), left channel only or right channel only (one LED illuminated).

To adjust the headphone volume, press the **VOL+** of **VOL–** buttons until the desires level is obtained.

### 3.6.2 Front Panel Remote Control Port (Model 120, 220 & 230 only)

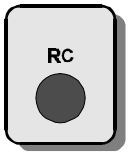


*Figure 3-7 Remote Control Port*

The front panel 1/8-inch (.32 cm) remote control port is used to control all internal operations of the ***CDQPrima***. It has the same functionality as the rear panel remote control connector, but is set independently of the rear connector. See the ***CDQPrima*** Technical Reference Manual for the cable wiring.

It may be necessary to configure this port the first time you use it, or after a reset to factory defaults. Use the

<Common><FPRmt Ctl>

sequence, setting the port baud, command echo and protocol to the desired settings.

## 3.7 Cooling Fan

On all revision 6 machines, the internal cooling fan can be temporarily turned off for silent operation. Use the

<Common><Fan>

keypress sequence to turn off the cooling fan. The fan is thermostatically controlled and will turn on if the internal temperature reaches unsafe levels.